Application No.: 09/518287   Docket No.: MWS-064
Art Unit 2126

<div align="center">

REMARKS

</div>

The Applicants present application contains pending claims 1-34 of which claims
1, 12 and 23 are independent. Claims 1-34 were rejected by the Examiner in the Office Action
mailed December 16, 2003. For the reasons set forth below, Applicants respectfully traverse the
rejections.

<u>Summary of Claimed Invention</u>

The claimed invention is directed to the calling and use of object methods in an object-
oriented environment from a dissimilar array-based (technical) computing environment supplied
by a mathematical tool. When a method is called from the array-based computing environment,
the data types accepted by the methods in the object-oriented environment are compared with the
input parameter data from the array-based computing environment. The methods are ranked
based on which methods can best accept the input parameters of the data from the calling array-
based computing environment. Based on the comparison, the claimed invention automatically
selects a method that best accepts the input arrays.

<u>Rejections under 35 U.S.C. §103(a)</u>

Claims 1, 7, 9, 12, 18 and 23 were rejected under 35 U.S.C. §103(a) as being
unpatentable over Cantin et al (EP 0 690 375 A2, hereafter "Cantin et al") in view of a Japanese
patent application assigned to NEC Corp., Japanese Application No. 1997JP-0303475("*Index
Implementation Method for Object Oriented Database-Involves Comparing Value of Structure
Type Member Variable to Obtain Size Related Rank for Variables*", hereafter "NEC"). Claim 1
is an independent method claim upon which claims 7 and 9 are dependent, claim 12 is an
independent medium claim upon which claim 18 is dependent, and claim 23 is an independent
system claim. For the reasons set forth below, these rejections are respectfully traversed.

<div align="center">

2

</div>

Application No.: 09/518287   Docket No.: MWS-064
Art Unit 2126

Summary of Cantin et al.

Cantin et al is directed towards persistent object mapping in an object-oriented environment. The process discussed in Cantin et al is directed towards mapping a data structure from an object-oriented environment to a storage data type environment. Numerous data mapping methods are defined for each persistent object in the object-oriented environment and the most appropriate one is called to map the data structure of the persistent object to a persistent storage medium. There is no discussion of matching method parameters from the persistent objects to data from an array-based computing environment which is to be used as input data for the methods. There is also no discussion of invoking the method of the persistent object, but rather separate methods are created and used to perform the mapping of the data structure from the persistent object to the persistent medium.

Summary of NEC

NEC discusses an improved search method for objects in an object-oriented database management system. A composite index key is formed for objects with member structures. An identified variable is used in conjunction with type information for an object structure in order to form the composite key index. The composite key index then becomes the basis of a management object subsequently used to retrieve objects. Size-related ranking of structure type member variables is also performed. NEC is directed towards efficient searching of an object-oriented database and is not directed to the calling of methods from an array-based computing environment.

Argument

The reliance on the combination of Cantin et al and NEC in the rejection of claims 1, 7, 9, 12, 18 and 23 is misplaced. The combination of references does not include all of the elements of the independent claims of the claimed invention. With regard to independent method claim 1, neither reference discusses the retrieving of method signatures containing lists of data types received by the method. Neither reference discusses the comparison of the data

3

Application No.: 09/518287
Art Unit 2126

Docket No.: MWS-064

types listed in the method signatures <u>with input</u> parameters received from an array-based computing environment. The process discussed in Cantin et al uses a method from a separate object class to map a persistent object data structure to a persistent storage medium. The persistent storage medium data type is evaluated only to determine a target for the conversion process. The data type from the persistent storage medium is not evaluated as a potential input parameter into a method that belongs to the persistent object. The method performing the mapping is a separate method and performs only a matching process.

Similarly the generalized discussion of the object class DOG cited on page 5 of the Cantin et al reference is not the same as the step of retrieving a set of method signatures. Accordingly, there is no comparison of a set of method signatures to a possible input parameter data type in order to determine a best match. Additionally, as noted above, the method that is invoked is a separate mapping method performed on a data structure in the persistent object, not a method belonging to the persistent data object. The method accordingly does not correspond to a selected method signature(evaluated for a best match to an input parameter).

Cantin et al thus lacks the first, second and fifth steps of claim 1. The Examiner has admitted that it lacks the third and fourth steps of claim 1 (see Office Action of July 17th, 2003, page 2, third paragraph).

NEC discusses the size-related ranking of member structures within objects held in an object-oriented database management system as part of the indexing of objects within the database. It does not discuss the ranking of a set of method signatures and does not discuss the ranking of a set of method signatures <u>as a function of the comparison.</u> As noted above, no comparison of acceptable parameters in a method in the persistent object to input parameters from a calling array-based environment is performed in Cantin et al. The ranking discussed in NEC is not the equivalent of the ranking of a set of method signatures performed as part of the function of <u>the comparison</u> (where "the comparison" is the comparison of acceptable parameters in a method in an object-oriented environment to input parameters from a calling array-based environment)(see second and third step of Applicant's claim 1). The first step of claim 1 defines "method signatures" as including a method name and listing data types received by the corresponding method. The data types of the signatures are then compared to input parameters

4

Application No.: 09/518287   Docket No.: MWS-064
Art Unit 2126

received from the array-based computing environment. The ranking referred to in step 3 is the ranking of the method signatures in order of suitability for handling the input parameters from the array-based computing environment. There is simply no disclosure, teaching or suggestion in either Cantin et al or NEC for this sort of ranking and comparison.

Since the signatures are not ranked as a function of the comparison, they are also not selected from the ranking (the fourth step). The Examiner's assertion that it would have been obvious to combine NEC with Cantin et al to improve search efficiency fails to address the fact that neither reference discloses, teaches or suggests a comparison and ranking method based on the suitability of methods for handling input parameters from an array-based computing environment as claimed by Applicants. In fact, the combination of references lacks all five steps of the method claim of independent claim 1. Since claims 7 and 9 are dependent directly on claim 1 and include all of the elements of claim 1, the combination of references also fails to render claims 7 and 9 obvious and unpatentable.

Claim 12 is a medium claim corresponding to claim 1 and the claim 1 analysis is equally applicable. The combination of references lacks all five elements of the independent medium claim 12. Since dependent claim 18 is dependent directly on claim 12 and includes all of the elements of claim 12, the combination of references also fails to render claim 18 obvious and unpatentable.

Independent claim 23 is a system claim. Claim 23 includes a signature selector element which is used to rank a list of signatures corresponding to methods within the object-oriented environment with one of the methods subsequently being invoked. As previously discussed, the cited combination of references lacks the ranking of method signatures and the invoking of a method based on the ranking. Since all of the elements of claim 23 are not suggested, taught or disclosed by the cited combination of references, claim 23 is not rendered obvious by the combination of references.

5

Application No.: 09/518287   Docket No.: MWS-064
Art Unit 2126

Addition 35 U.S.C. §103(a) rejections

Claims 3-6, 8, 14-17, 19, 25-29 and 34 were rejected under 35 U.S.C. §103(a) as being
unpatentable over Cantin et al in view of Pohlheim in further view of Hartmut Pohlheim
("*Genetic and Evolutionary Algorithm Toolbox for use with MATLAB*", hereafter "Pohlheim").
Claims 2, 13 and 24 were rejected under 35 U.S.C. §103(a) as being unpatentable over Cantin et
al in view of Pohlheim in further view of Admitted Prior Art. Claims 10, 11, 20-22, 31 and 32
were rejected under 35 U.S.C. §103(a) as being unpatentable over Cantin et al in view of NEC,
in view of Pohlheim in further view of Bill Venners ("Eternal Math"). Claim 30 was rejected
under 35 U.S.C. §103(a) as being unpatentable over Cantin et al in view of NEC in further view
of John W. Eaton ("A High Level Interactive Language for Numerical Computations, Edition 3
for Octave Version 2.1x"). Claim 33 was rejected under 35 U.S.C. §103(a) as being
unpatentable over Cantin et al in view of NEC in further view of David M. Gay ("Symbolic-
Algebraic Computations in a Modeling Language for Mathematical Programming"). All of
these rejections are directed to dependent claims which are dependent upon the underlying
independent claims 1, 12 and 23 discussed above. Since the combination of references discussed
above fails to teach, disclose or suggest the underlying independent claims, and since none of
these additional references for the dependent claims supply the missing independent claim
elements discussed above, these rejections are also unsupported.

6

Application No.: 09/518287   Docket No.: MWS-064
Art Unit 2126

<div align="center">

Conclusion

</div>

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. MWS-064 from which the undersigned is authorized to draw.

Dated: March 16, 2004   Respectfully submitted,

                                               By _____
                                               John S. Curran
                                               Registration No.: 50,445
                                               LAHIVE & COCKFIELD, LLP
                                               28 State Street
                                               Boston, Massachusetts 02109
                                               (617) 227-7400
                                               (617) 742-4214 (Fax)
                                               Attorney/Agent For Applicant

<div align="center">

7

</div>